

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1-83. (cancelled)
84. (previously presented) A method for untangling single-wall carbon nanotubes comprising:
- a) providing tangled single-wall carbon nanotubes;
 - b) cutting at least a portion of the single-wall carbon nanotubes to un-tangle at least some of the single-wall carbon nanotubes; and
 - c) recovering a material comprising the single-wall carbon nanotubes un-tangled by the cutting step.
85. (previously presented) The method of claim 84 wherein the single wall carbon nanotubes are cut by a method selected from the group consisting of irradiation with ions, oxidative attack, sonication, oxidative etching, electron beam cutting, plasma arc cutting and combinations thereof.
86. (previously presented) The method of claim 84 wherein the single-wall carbon nanotubes in the material have a mean length that is shorter than a mean length of the single-wall carbon nanotubes in the tangled single-wall carbon nanotubes.
87. (previously presented) The method of claim 84 wherein the material comprises single-wall carbon nanotubes having lengths in the range between about 5 and about 1000 nm.

88. (previously presented) The method of claim 84 wherein the material comprises single-wall carbon nanotubes having lengths in the range between about 50 and 500 nm.
89. (previously presented) The method of claim 84 further comprising forming a suspension of the tangled single-wall carbon nanotubes in a liquid medium.
90. (previously presented) The method of claim 89 wherein the liquid medium comprises a hydrocarbon.
91. (previously presented) The method of claim 89 further comprising refluxing the suspension.
92. (previously presented) The method of claim 89 further comprising sonicating the suspension with acoustic energy.
93. (previously presented) The method of claim 84 wherein the tangled single-wall carbon nanotubes comprise single-wall carbon nanotubes in a form selected from the group consisting of ropes and mats.
94. (previously presented) The method of claim 93 further comprising dispersing the tangled single-wall carbon nanotubes in a medium selected from the group consisting of an aqueous detergent solution and organic solvent.
95. (previously presented) The method of claim 94 wherein the dispersing is by sonication in a liquid selected from the group consisting of benzene, toluene, xylene, naphthalene, 1,2-dichloroethane and combinations thereof.
96. (previously presented) The method of claim 84 wherein the recovery comprises filtration.

97. (currently amended) A method for ~~shortening the lengths of~~ cutting single-wall carbon nanotubes comprising:
- a) providing a material comprising single-wall carbon nanotubes at least some of which have defects in their side walls;
 - b) ~~cutting at least a portion of the single-wall carbon nanotubes in the material~~ attacking the defects to cut at least a portion of the single wall carbon nanotubes in the material; and
 - c) recovering a product in which a mean length of single-wall carbon nanotubes in the product is less than a mean length of the single-wall carbon nanotubes in the material.
98. (currently amended) The method of claim 97 wherein the ~~cutting~~ attacking of such defects of the single-wall carbon nanotubes is done by a method selected from the group consisting of sonication of a suspension of single-wall carbon nanotubes at a sufficient energy input and for a sufficient time, ~~energetic ion impact, electron beam cutting, use of a plasma arc,~~ oxidation, oxidative etching, free radical attack, chemical reactions, heat, pressure, annealing, refluxing and combinations thereof.
99. (currently amended) The method of claim 98 wherein refluxing is done in concentrated HNO₃.
100. (currently amended) The method of claim 97 additionally comprising a step wherein defects are introduced to the ~~wherein~~ side-walls of at least a portion of the single-wall carbon nanotubes ~~in the material have defects~~.
101. (currently amended) The method of claim 100 wherein at least some of the defects are introduced during the manufacture of the single-wall carbon nanotubes.

102. (currently amended) The method of claim 100 wherein at least some of the defects are introduced by a technique selected from the group consisting of sonication of a suspension of single-wall carbon nanotubes at a sufficient energy input and for a sufficient time to effect cutting of the nanotubes, free radical attack, energetic ion impact, ~~electron beam cutting, heat,~~ high temperatures, high pressure, plasma arc, oxidation, oxidative etching, refluxing, and combinations thereof.

103 -108. (cancelled)

109. (previously presented) A method of modifying single-wall carbon nanotubes comprising the step of removing a fullerene cap on at least one end of the single-wall carbon nanotubes.

110. (previously presented) The method of claim 109 wherein the single-wall carbon nanotubes are exposed to an oxidative treatment.

111. (previously presented) The method of claim 110 wherein the oxidative treatment comprises a technique selected from the group consisting of oxidative etching, electrochemical oxidative etching and combinations thereof.

112. (previously presented) The method of claim 110 wherein the oxidative treatment comprises the use of a chemical selected from the group consisting of nitric acid, oxygen, carbon dioxide and combinations thereof.

113. (previously presented) The method of claim 110 wherein the oxidative treatment is conducted at a temperature at most about 500°C.

114-140. (cancelled)

141. (new) The method of claim 98 wherein the single-wall carbon nanotubes in the material are cut by sonication, wherein the sufficient energy input comprises a frequency of about 40 KHz and a power output of about 20 W.

142. (new) The method of claim 98 wherein the single-wall carbon nanotubes in the material are cut by sonication, wherein the sufficient time is in a range of about 10 minutes and about 24 hours.
143. (new) The method of claim 98 wherein the single-wall carbon nanotubes in the suspension are cut by sonication of the suspension, wherein the sufficient energy input comprises a frequency of about 40 KHz and a power output of about 20 W.
144. (new) The method of claim 98 wherein the single-wall carbon nanotubes in the suspension are cut by sonication of the suspension, wherein the sufficient time is in a range of about 10 minutes and about 24 hours.